intersection over union (I/U: Intersection over Union is a form of measurement used to indicate the accuracy of an object detector.) for grade 3-4. The mean average precision (mAP) score of our object detection model is %65.9 for test data set (image 1). The estimation quality of the model can be affected by the distribution and number of each class.

Conclusion: The experience of the x-ray technician, dose adjustment, and position differences due to patient compliance complicate the standardization of SIJ radiography and this may cause interobserver disagreement (3). Artificial intelligence models to be created with a larger and homogeneous data set in order to ensure objective standardization in the interpretation of the SIJ graph can help physicians.

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Disclosure of Interests: None declared.

DOI: 10.1136/annrheumdis-2021-eular.3343

POS0037

DOES IMAGING OF THE SACROILIAC JOINT DIFFER IN PATIENTS PRESENTING WITH UNDIAGNOSED BACK PAIN AND PSORIASIS, ACUTE ANTERIOR UVEITIS, AND COLITIS: AN INCEPTION COHORT STUDY

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Background: Axial spondyloarthritis (axSpA) presents diagnostic challenges incurring a delay of up to a decade and relies considerably on radiographic and MRI evidence of sacroiliitis which has led to the development of classification criteria which also rely on imaging. However, it has been suggested that such criteria may not be appropriate for axSpA patients presenting with other forms of SpA, especially psoriatic, because imaging features may vary in frequency and/or may be atypical. This hypothesis has never been tested in a prospective inception cohort of patients presenting with undiagnosed back pain.

Objectives: We aimed to compare the spectrum of radiographic and MRI abnormalities in the sacroiliac joint (SIJ) of an inception cohort of patients presenting with undiagnosed back pain and psoriasis, iritis, and colitis.

Methods: We used data from the prospective multicenter Screening for Axial Spondyloarthritis in Psoriasis, Iritis, and Colitis (SASPIC) Study, which is aimed at early detection of axial SpA in patients referred by the respective specialist after first presenting with these disorders. Consecutive patients ≤ 45 years of age with ≥ 3 months undiagnosed back pain with any one of psoriasis, AAU, or colitis undergo routine clinical evaluation by a rheumatologist for axial SpA followed by imaging. In SASPIC I, MRI evaluation of the SIJ was ordered per rheumatologist decision. In SASPIC II, MRI evaluation was ordered for all patients. Radiographs and MRI scans were assessed by two central readers and comparisons of the three groups were based on concordant assessments of imaging features. Evaluation of MRI scans included both global assessment for presence/absence of axSpA with confidence scale (-10 to +10), active and structural lesions typical of axSpA per recent ASAS definitions, and granular assessment of individual lesions according to SIJ quadrants and halves in consecutive semicoronal slices through the SIJ. Groups were compared by ANOVA and the chi-square test.

Results: A total of 240 patients were recruited, 143 from SASPIC I and 97 from SASPIC II, 101 (42.1%) being diagnosed with axSpA (65.3% male, mean age 34.4 years, mean symptom duration 8.7 years, B27 positive 55.4%). Mean age of colitis (N=101), psoriasis (N=61), iritis (N=78) patients were 33.4, 36.6, 34.3 years, respectively, mean symptom duration was 6.8, 7.2, 9.4 years, respectively, and % males were 45.5%, 52.5%, 51.3%, respectively. There were no significant group differences for unilateral versus bilateral radiographic sacroiliitis and no significant differences in the frequencies, type, or distribution of MRI lesions (Table 1).

Conclusion: Data from the SASPIC prospective inception cohort does not support the view that imaging of the SIJ differs in psoriatic axSpA, which appears similar to axSpA associated with iritis or colitis. These data support the umbrella concept of axSpA.

Imaging Feature	Colitis (n=30)	Psoriasis (n=19)	Iritis (n=52)	P value
Unilateral sacroiliitis (grade ≥ 2), N(%)	1 (3.3%)	0 (0%)	2 (3.8%)	0.69
mNY criteria +, N(%)	5 (16.7%)	6 (31.2%)	15 (28.8%)	0.39
Grade of sacroiliitis, mean(SD)	1.8 (2.2)	2.1 (2.7)	2.2 (2.4)	0.76
MRI indicative of axSpA, N(%)	15 (50.0%)	11 (57.9%)	32 (61.5%)	0.60
MRI indicative of axSpA (confidence $\geq 5/10$), N(%)	14 (46.7%)	10 (52.6%)	30 (57.7%)	0.63
MRI active lesion typical of axSpA, N(%)	6 (20.0%)	6 (31.6%)	18 (34.6%)	0.37
MRI structural lesion typical of axSpA, N(%)	11 (36.7%)	7 (36.8%)	18 (34.6%)	0.98
MRI with unilateral lesion (any)	2 (6.7%)	3 (15.8%)	11 (21.2%)	0.22
MRI with unilateral lesion (BME)	1 (3.3%)	2 (10.5%)	5 (9.6%)	0.54
MRI with unilateral lesion (Erosion)	0 (0%)	0 (0%)	3 (5.8%)	0.23
MRI with unilateral lesion (Sclerosis)	1 (3.3%)	1 (5.3%)	3 (5.8%)	0.89
MRI with unilateral lesion (Fat)	0 (0%)	0 (0%)	0 (0%)	NA
MRI with iliac lesion	17 (56.7%)	12 (63.2%)	32 (61.5%)	0.88
MRI with sacral lesion	12 (40.0%)	11 (57.9%)	31 (59.6%)	0.21

Disclosure of Interests: Walter P Maksymowych Speakers bureau: Abbvie, Janssen, Novartis, Pfizer, UCB, Consultant of: Abbvie, BMS, Boehringer, Galapagos, Gilead, Lilly, Novartis, Pfizer, UCB, Grant/research support from: Abbvie, Novartis, Pfizer, Ulrich Weber: None declared, Jon Chan: None declared, Raj Carmona: None declared, James Yeung: None declared, Sibel Aydin: None declared, Jodie Reis: None declared, Liam Martin: None declared, Ariel Masetto: None declared, Olga Ziouzina: None declared, Dianne Mosher: None declared, Stephanie Keeling: None declared, Sherry Rohekar: None declared, Rana Dadashova: None declared, Joel Paschke: None declared, Amanda Carapellucci: None declared, Robert G Lambert: None declared.

DOI: 10.1136/annrheumdis-2021-eular.3382

POS0038

THE INFLUENCE OF AGE ON THE PREVALENCE OF INFLAMMATORY AND POST-INFLAMMATORY MRI LESIONS IN THE SACROILIAC JOINTS OF PATIENTS WITH AND WITHOUT AXIAL SPONDYLOARTHRITIS

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Background: Axial spondyloarthritis (axSpA) is clinically characterized by chronic inflammatory back pain and by inflammatory and structural changes in the sacroiliac joint (SIJ) as assessed by magnetic resonance imaging (MRI). Several studies have reported high rates of bone marrow edema (BME) suggestive of inflammatory SIJ changes in up to 20% of individuals in the general population <45 years. An update of the definition of a positive MRI of the SIJ in axSpA for classification purposes, based on the number of slices or quadrants showing BME or structural changes such as erosions or fat lesions (FL), was recently published by ASAS.

Objectives: To compare the influence of age on the prevalence of inflammatory and structural MRI changes in the SIJ of patients with chronic low back pain diagnosed with axSpA or non-SpA.

Methods: MRIs of the SIJ of patients referred for differential diagnosis of back pain who were finally diagnosed with axSpA or not by experienced rheumatologists, were evaluated using semi-coronal STIR and T1-weighted MRI sequences. All images were scored blinded to, age, sex and diagnosis for the occurrence of BME, FL, erosions and ankylosis on the level of SIJ-quadrants (SIJ-Q). Patient groups were built based on decade of age (until 29, 30-39, 40-49 and ≥ 50 years).

Results: A total of 309 patients (175 axSpA and 134 non-SpA) with complete MRI sets were included in the analysis. The mean age was 38.5 $\pm$ 11.4 and 43.4 $\pm$ 13.8, 66.9% and 35.8% were male, the mean CRP was 1.6 $\pm$ 2.4 and 1.1 $\pm$ 2.1mg/dl and the median back pain symptom duration was 48 and 60 months, respectively. The number of SIJ-Q with BME and erosions was significantly higher in axSpA vs. non-SpA independent of the age group (Table 1). In comparison, with exception of the patients in the oldest population (≥ 50 years), the number of SIJ-Q with FL and the number of patients with at least one FL was not different between subgroups, while the number of erosions and FL but not BME was higher in both groups with increasing age. In the univariate analysis, only female sex was significantly associated with higher occurrence of FL.

Conclusion: Despite a relatively high prevalence in non-SpA patients, BME and erosions were significantly more frequent in axSpA independent of age, while the presence of FL was not different between groups. FL and erosions are increasingly found in older age groups independent of diagnosis. These data are relevant for the interpretation of MRI findings in the SIJ of patients suspicious of axSpA.

Table 1. Comparison of MRI findings between axSpA and non-SpA patients at different age groups

Age subgroup	Diagnosis	Mean number of SIJ quadrants			Proportion of patients with...		
		BME	FL	Erosion	BME	FL	Erosion
until 29 years	axSpA (n=46)	6.0±3.7	6.8±5.7	4.4±3.8	95.7%	80.4%	89.1%
	non-SpA (n=25)	1.4±1.5	5.4±4.4	0.8±1.5	64.0%	76.0%	48.0%
	p-value	<0.001	0.311	<0.001	<0.001	0.664	<0.001
30-39 years	axSpA (n=50)	5.0±4.1	8.7±5.9	4.6±3.7	92.0%	96.0%	82.0%
	non-SpA (n=26)	1.0±1.3	9.5±6.0	1.1±1.3	46.2%	92.3%	53.8%
	p-value	<0.001	0.485	<0.001	<0.001	0.23	0.01
40-49 years	axSpA (n=47)	4.2±3.7	11.3±6.0	4.6±3.7	85.1%	97.9%	87.2%
	non-SpA (n=35)	1.4±2.9	10.3±5.8	1.6±2.4	34.3%	97.1%	62.9%
	p-value	<0.001	0.413	<0.001	<0.001	0.833	0.010
≥50 years	axSpA (n=32)	5.2±4.9	16.4±5.4	5.5±4.1	87.5%	100.0%	87.5%
	non-SpA (n=48)	1.9±2.1	13.4±4.5	2.0±2.0	66.7%	100%	72.9%
	p-value	0.001	0.006	<0.001	0.036	1.000	0.121

Disclosure of Interests: None declared.

DOI: 10.1136/annrheumdis-2021-eular.3154

POS0039 MRI LESIONS IN SPA: A COMPARISON WITH AGE AND SEX MATCHED PARTICIPANTS WITH NON-INFLAMMATORY BACK PAIN

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Background: Magnetic resonance imaging (MRI) is becoming increasingly important in axial spondyloarthritis (SpA) due to its unique role in early diagnosis, classification, and monitoring of disease (1, 2). It is the only disease assessment tool that has been validated with histological inflammatory cellularity in tissue biopsy of the sacroiliac (SI) joint (3). However, many MRI lesions are not exclusive to axial SpA and may occur in other conditions such as infection, degeneration and malignancy. Further characterization of these lesions may guide more targeted therapies.

Objectives: The objective of this study was to describe, investigate associated factors, and to compare individual MRI lesions with age and sex matched controls.

Methods: This was a cross-sectional observational study of MRI lesions of 431 participants with axial SpA compared with 53 age and sex matched participants with non-inflammatory back pain. Individual lesions identified included: discovertebral lesions (DVL), facet joint lesions, costovertebral joint lesions, corner inflammatory lesions (CIL), and fatty corner lesions (FCL). Associated factors of the lesions were determined by regression analyses.

Results: Compared to the control group, participants with axial SpA had more costovertebral lesions (12.5% vs 1.9%; $p=0.02$), CIL (46.6% vs 15.1%; $p=0.03$), and FCL (55.5% vs 39.6%; $p=0.03$). Multivariate regression showed that age ($OR=1.02$; $p=0.03$), regular alcohol use ($OR=0.40$; $p=0.04$) and radiographic axial SpA ($OR=1.89$; $p=0.01$) were associated with DVL; Chinese ethnicity ($OR=0.06$; $p=0.01$) and radiographic axial SpA ($OR=3.63$; $p=0.01$) were associated with facet joint lesion; radiographic axial SpA ($OR=4.26$; $p<0.001$) was associated with costovertebral joint lesion; male gender ($\beta=1.10$; $p=0.01$), HLA B27 ($\beta=1.02$; $p=0.02$), and radiographic axial SpA ($\beta=1.05$; $p=0.01$) were associated with CIL; age ($\beta=0.10$; $p<0.01$), male gender ($\beta=1.96$; $p=0.01$), body weight ($\beta=0.11$; $p<0.01$), HLA B27 ($\beta=3.23$; $p<0.001$), and radiographic axial SpA ($\beta=1.77$; $p=0.02$) were associated with FCL.

Conclusion: The individual MRI lesions more specific to axial SpA when compared to non-inflammatory back pain were costovertebral joint lesions, CIL, and FCL.

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Disclosure of Interests: None declared.

DOI: 10.1136/annrheumdis-2021-eular.4113

Molecular and structural changes of bone turnover during inflammatory disease

POS0040 THE DECREASE IN BONE MINERAL DENSITY DEPENDS ON THE CONCENTRATIONS OF ANGIOPOIETIN-LIKE PROTEIN TYPE 4 IN PATIENTS WITH RHEUMATOID ARTHRITIS

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Background: New serological markers that can serve as objective indicators of osteoporotic changes in patients with rheumatoid arthritis (RA) are being currently searched [1, 2, 3, 4, 5].

Objectives: To reveal the connection between the concentrations of serum angiotensin-like protein type 4 (ANGPTL4) and the decrease in bone mineral density (BMD) in patients with RA.

Methods: 114 patients with reliable RA (90.4% of women, 9.6% of men) aged 21 to 80 years (mean age 55.4 ± 11.2 years old, disease duration - 11.18 ± 9.03 years, positive for rheumatoid factor (RF-IgM) - 63.2%, positive for anti-citrullinated protein antibody (ACPA) - 59.7%) were examined using a bone X-ray densitometer LUNAR DPX (GE, USA). Patients with an advanced clinical stage - 49%, moderate activity according to DAS28 - 58.8%, II-III radiological stage - 85.1% and functional class II - 64.9% prevailed. ANGPTL4 measurement in blood serum was carried out by enzyme immunoassay using a commercial test system "RayBio Human ANGPTL4 ELISA Kit" (RayBiotech, USA). ESR, RF, as well as C-reactive protein (CRP), ACPA, and antibodies to modified vimentin (anti-MCV) in an ELISA test were determined in all RA patients.

Results: ANGPTL4 indices in RA patients correlated with the CRP level ($r = 0.34$, $p = 0.001$) and the DAS-28 ($r = 0.29$, $p = 0.002$). There was no correlation between the level of ANGPTL4 and the intake of glucocorticoids, both at the time of the study ($p = 0.678$) and with their long-term (more than 3 months) use ($p = 0.097$). There was a negative correlation of weak strength between ANGPTL4 and the dose of non-steroidal anti-inflammatory drugs ($r = -0.21$, $p = 0.035$). There was no correlation between ACPA, anti-MCV, and ANGPTL4 levels ($p > 0.1$ and $p = 0.084$). A direct correlation was found between the level of ANGPTL4 and the presence of osteopenia in RA patients ($r = 0.43$, $p = 0.036$), as well as a negative correlation between ANGPTL4 and bone mineral density in the spine (BMD L_{1-4} , $r = -0.631$, $p < 0.001$), but not in the femur ($p > 0.05$). Densitometry data also allowed to establish a negative correlation between low values of the T-criterion and increased titers of anti-MCV ($r = -0.51$, $p = 0.029$), but not ACPA ($p = 0.276$). It has previously been noted that anti-MCV are able to activate osteoclasts with a consequent decrease in periarthral BMD.

Conclusion: The absence of a relationship between anti-MCV and the level of ANGPTL4 may indicate different mechanisms of osteoporosis development and localization of osteoporotic changes in groups of anti-MCV or ANGPTL4 positive patients with RA.

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Disclosure of Interests: None declared.

DOI: 10.1136/annrheumdis-2021-eular.2266